

Biological Weapons Convention 8th Review Conference outcome: below expectations

The Eighth Review Conference of the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, better known as the Biological Weapons Convention (BWC), convened in Geneva from 7 to 25 November 2016.

As the first multilateral treaty banning an entire category of weapons of mass destruction, the Convention has come a long way since it entered into force over 40 years ago and it has successfully established a strong norm against biological weapons. Held under Article XII of the BWC, the purpose of the Review Conference was to review the operation of the Convention, taking into account any new relevant scientific and technological developments. The conference was attended by over 900 participants from 124 states parties, four signatory states, two states ‘neither parties nor signatories to the Convention’, four UN organisations, nine international organisations and 33 NGOs and research institutes. This was a record participation with a 20 percent increase in attendance by States Parties compared to the Seventh Review Conference in 2011. Additionally, Guinea, Liberia and Nepal all joined the BWC just beforehand and were welcomed by the Conference as new States Parties, thereby increasing the BWC’s membership to 178 States Parties.

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Preparations for the Review Conference

The Meeting of States Parties in December 2015 decided that the Preparatory Committee for the Eighth Review Conference would be convened in April and August 2016 (see the Report of the Meeting, dated 22 February 2016, BWC/MSP/2015/6, paragraph 56). This decision represented an innovation compared to the 2011 preparatory process and enabled a much more substantive discussion among states parties before the start of the Review Conference. The first meeting from 26 to 27 April 2016 focussed on the necessary procedural decisions for the Review Conference and also included a general exchange of views. At the resumed meeting from 8 to 12 August 2016, states parties undertook a comprehensive consideration of all provisions of the Convention, as well as considering cross-cutting issues such as science and technology and the next Intersessional Programme (ISP). States also considered the BWC Implementation Support Unit (BWC-ISU), which was established by the Sixth Review Conference in 2006 to provide support and assistance to states parties in the implementation of the Convention. One hundred and fourteen states parties participated in the Preparatory Committee, which underlined the considerable interest in the work and relevance of the Convention and represented an increase of 21 parties compared to the 2011 Preparatory Committee.

In addition to the work of the Preparatory Committee itself, a number of informal activities contributed to a substantive exchange of views in the run up to the Eighth Review Conference. Four regional workshops were held between June and September 2016 in Astana, Brasilia, New Delhi and Addis Ababa. These events were financed under European Union Council Decision 2016/51 (CFSP) in support of the BWC. The four workshops attracted more than 200 participants and were designed to allow in-depth discussions among regional parties on all aspects of the Convention.

Furthermore, the governments of Canada and China and the BWC-ISU co-organised an international workshop in Wuxi, China, from 5 to 7 September 2016. The meeting involved

63 participants from 32 states parties, three international or regional organisations, and three non-governmental organisations or academic institutions participated in the event (see BWC/CONF.VIII/WP.44, dated 29 November 2016). Moreover, two workshops, co-organised by the Geneva Centre for Security Policy, the International Law and Policy Institute and the BWC-ISU, were held in Geneva in June and September 2016. Additionally, a Wilton Park conference on preparations for the Review Conference took place from 21 to 23 September in the UK.

The comprehensive exchange of views during this preparatory process, which saw many ambitious and innovative proposals for the next ISP, led to high expectations among States Parties for the Review Conference.

Proposals and main themes

States parties submitted a total of 83 Working Papers during 2016, thereby almost tripling the number of papers submitted to the Seventh Review Conference in 2011. All Working Papers can be found under the 'Official Documents' Sections of the 'Preparatory Committee for the Eighth Review Conference' web page and the 'Eighth Review Conference' web page of the BWC website. Proposals covered a wide range of issues, including a mechanism to review developments in science and technology and the establishment of a database under Article VII (which concerns assistance to States exposed to danger resulting from a violation of the treaty). Papers also examined guidelines for the submission of a request for assistance under Article VII; voluntary codes of conduct for biological scientists; and the Geneva Protocol (an instrument predating the BWC that prohibits use of biological weapons). Proposals were also tabled relating to a legally-binding instrument including a verification mechanism (a long-standing contentious issue among States Parties and other stakeholders) and an export control mechanism including a proposal for dispute settlement and transfer denials. Other proposals looked at consultation and clarification procedures; the concept of operationalising mobile biomedical units under the

Convention; enhancing the decision-making authority of the Meeting of States Parties; as well as expanding the scope and substance of a new ISP including the work of the ISU.

Proceedings of the Eighth Review Conference

The Eighth Review Conference was opened on behalf of the Secretary-General of the United Nations on Monday 7 November 2016 by Under-Secretary-General Kim Won-soo, the High Representative for Disarmament Affairs. Ambassador György Molnár from Hungary was elected as the President of the Review Conference. After concluding opening formalities, the general debate continued until 9 November. The debate included statements by 82 States Parties, three international organisations and, in an informal session, 18 NGOs and research institutes.

Subsequently and over the course of the following two and a half weeks, a total of 13 meetings of the Committee of the Whole (COW) and 24 plenary meetings were held until the conclusion of the Review Conference on 25 November 2016. The COW was chaired by Ambassador Michael Biontino from Germany. It carried out four ‘readings’ of the Final Declaration, which is the part of the Final Document that contains an article-by-article review of the Convention’s operation and is largely ‘backwards-looking’ in nature. The proceedings mainly saw a repetition of well-known and diverging positions on several issues.

While no one expected easy negotiations, the fact that the COW laboured to agree on consensus updates to the Final Declaration represented a first sign of the difficulties to be encountered in reaching a substantive outcome of the entire Review Conference. Indeed, it was only on the very last day of the Conference that states parties managed to find agreement on the Final Declaration, largely by using identical text to that used at the Seventh Review Conference. Accordingly, only a very limited number of new textual elements in the Final Declaration found consensus, mostly on Article VII (see above), as well as a few new additional understandings

and agreements on Article X (which concerns facilitating peaceful uses of biological science).

With regard to the ‘forward-looking’ aspects of the Final Document, Ambassador Molnár appointed seven facilitators to help states parties find common ground. In the middle of the second week of the Review Conference, the facilitators issued a non-paper that contained draft elements for the Final Document. With respect to the ISP for the period from 2017 to 2020, the suggested approach was quite different in its structure and more substantive compared to the ISP from 2012 to 2015. Most notably, it envisaged 15 days of meetings per year with a five-day Meeting of States Parties (MSP), a Science and Technology Committee and three Open-Ended Working Groups (OEWGs) on Implementation, Cooperation and Preparedness and Assistance. The proposal also envisaged an enhancement of the ISU with two additional staff members. While many States Parties said that they could support elements of the non-paper, some also said that it crossed some of their negotiating ‘red lines’. Ambassador Molnár, therefore, undertook to hold further consultations, assisted by the facilitators, and to produce a new version of the ‘forward-looking’ part of the Final Document.

Following intense consultations held with delegations and taking into account additional feedback from the facilitators, Ambassador Molnár issued a written proposal on 23 November 2016 in his capacity as President. This document represented a refinement of the facilitators’ non-paper. Accordingly, it comprised an MSP of a period up to five days and four OEWGs each lasting up to five days on Science and Technology; International Cooperation; Preparedness, Response and Assistance; and National Implementation. Each of the OEWGs would meet every other year, thereby maintaining the annual time of meetings at the level of 15 days per year, as proposed in the facilitators’ non-paper. Notably, the President’s Proposal also included carefully-worded language on enhancing the role and authority of the MSP, as well as on potential further measures that would contribute to the

integrated and comprehensive implementation of the Convention.

Furthermore, the proposal also listed items for discussion during the next ISP such as a voluntary model code of conduct for biological scientists; examination of the proposed biomedical units concept and improvement of CBM submissions in terms of quantity, quality and format. Other proposals included strengthening consultative measures under Article V (which concerns bilateral and multilateral discussions to address treaty implementation matters). Moreover, proposals included issues related to Article III including effective export controls (this article prohibits the transfer of biological weapons and related equipment to others, and also assisting others in their manufacture), and a set of guidelines and formats to assist States Parties in the submission of an application for assistance under Article VII. Additionally, the Ambassador Molnár's paper also suggested the establishment of a database to facilitate specific requests for and offers of assistance and cooperation in the framework of Article VII. Finally, the proposal foresaw the enhancement to the ISU budget to cover two additional professional posts.

While it seemed that many delegations could have supported significant elements of the President's text with a view to finding some form of compromise acceptable to all, the informal consultations held on the penultimate day of the Review Conference clearly showed that this was not in fact feasible.

As such, and given that no consensus could be achieved on a substantive ISP for the period 2017 to 2020, a 'fallback' package with a very limited scope was prepared and subsequently agreed upon by the conference. Accordingly, the Final Document as adopted makes provision for one single Annual Meeting of States Parties per year with a duration of up to five days and the renewal of the ISU's mandate with three staff members. It also provides for the continuation and improvement of the cooperation and assistance database

under Article X and renews the BWC sponsorship programme. Of particular interest is the rather open language on the scope of the first Meeting of States Parties which will take place in December 2017. The Final Document asserts that the Meeting 'will seek to make progress on issues of substance and process for the period before the next Review Conference, with a view to reaching consensus on an intersessional process.' It remains to be seen whether states parties will be able to bridge the deep divisions which emerged at the Review Conference during 2017.

Assessment and conclusion

The general feeling at the end of the Eighth Review Conference was one of disappointment and frustration. As hopes had been high, the actual outcome of the Conference left many states parties discontent, as shown in the closing statements made by 26 delegations following the approval of the Final Document. Indeed, even though a consensus Final Document was agreed, the decisions contained in it were – as described by one delegate – 'minimal', especially when compared with the large number of working papers, ideas and programmes of work originally put forward. In the same vein, some delegations expressed in their statements that the outcome was not commensurate with their efforts and the expectations they had.

The fundamentally different visions by some key players on the way forward by either pursuing a comprehensive, legally-binding verification protocol versus incrementally strengthening the BWC can be seen as the main stumbling block of the Conference. Additionally, the issue of enhanced decision-making authority of the MSP was another key issue of contention. On the other hand, it should also be noted that some delegations from the 'Non-Aligned Movement and Other States' that support the long-term vision of putting in place a legally binding protocol including verification procedures, constructively engaged in the Review Conference with a view to strengthen the Convention by making some concrete proposals.

Thomas M. Countryman, US Acting Under Secretary of State for Arms Control and International Security delivered the US statement at the general debate. He said: ‘If we fail to come to consensus this month, it will not damage this Convention’. The future will show whether the words of Mr Countryman were prophetic. However, one conclusion can already be drawn: substantive bilateral and multilateral discussions on diverging issues under the BWC are urgently needed to break down the existing divisions among States Parties and realise the common goal of strengthening the BWC and thereby upholding the established norm against biological weapons. Otherwise, States Parties might feel inclined to instead focus on other seemingly more effective (albeit less comprehensive and universal) initiatives outside the Convention such as the Global Health Security Agenda, the G7 Global Partnership or other bilateral and plurilateral initiatives. Such a trend could lead to a fragmentation of the BWC and thereby run the risk of losing its relevance as a central element in the international regime against weapons of mass destruction.

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Internationalising work on nuclear disarmament verification

By Noel Stott

The recognition of the need to internationalise work on nuclear disarmament verification took another important step forward with the passing by the UN General Assembly of resolution 71/67 late last year. The document requests the UN Secretary-General to ‘seek the views of Member States on the development and strengthening of practical and effective nuclear disarmament verification measures’, and to establish a group of governmental experts to consider the role of verification in advancing nuclear disarmament.

The group is set to meet in Geneva in 2018 and 2019 for a total of three sessions of five days each. The resolution requires the group to ‘identify and develop’ disarmament verification measures’ that facilitate the objective of achieving and maintaining a world without nuclear weapons through ‘advancing, understanding and addressing technical challenges of nuclear disarmament verification and monitoring, including tools, solutions and methods and capacity-building’.

As VERTIC has indicated in its Verification Matters series (no. 11 and 12), realising such an aim may require developing the ability to verify several types of disarmament-related activities. These could include warhead dismantlement; disposition of fissile material recovered from weapons; cessation of weapons production activities; and providing assurance on the peaceful nature of states’ nuclear activities. Achieving this goal may also require developing the capacity to conduct such verification tasks in a range of scenarios involving differing arrangements of disarmament activities, states and international bodies. In addition to providing confidence that states are adhering to any disarmament undertakings that are forthcoming in the long term, the development of such tools may also facilitate the advancement of nuclear disarmament efforts

in the shorter term.

According to Norway’s Minister of Foreign Affairs, Børge Brende, the verification of nuclear disarmament – ensuring that it is indeed taking place as pledged – is crucial to securing international disarmament agreements.

It has long been recognised that to enable the verification of nuclear warhead dismantlement and the verification of production processes at sensitive facilities throughout the nuclear fuel cycle, a range of technical, legal, operational challenges must be understood and addressed. Additional security challenges may arise from the participation of non-nuclear weapon states representatives during certain verification activities that risk the possibility of spreading proliferative information in contravention of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

Two bilateral initiatives, the first between UK and Norway, with VERTIC’s involvement, and the second between the UK and the US have in the recent past attempted to set the foundations for possible approaches to address these challenges. A more recently launched multilateral initiative, the International Partnership for Nuclear Disarmament Verification, has widened participation to about 25 NPT states parties. However, UNGA Resolution 71/67 is the first attempt to formally multilateralise such activities through the United Nations system, and this will be important for any future disarmament effort at the unilateral, bilateral and multilateral level.

These initiatives support the view that verification solutions exist – or can be developed – and that engagement is feasible between nuclear weapon states and non-nuclear weapon states on measures that resolve the tension between reliable verification and the disclosure of sensitive information.

While agreements on disarmament and verification activities to be carried out will be diplomatically negotiated, technical experts will be needed to propose and review measures and procedures that would achieve the required confidence.

As indicated above, the identification and initial agreement on such potential tools to be used in the future would also contribute to present initiatives aimed at taking forward multilateral nuclear disarmament negotiations and would not necessarily depend on the global geopolitical situation and international climate. However, verification policy decisions will need to be informed by what is technically feasible now and what may become available in the future.

To complement the group of governmental experts as envisaged by UN resolution 71/67, there is, therefore, a need for a group of scientists and others with technical expertise in nuclear weapons, the nuclear fuel cycle and related areas. Participants could be drawn from nuclear weapon states, countries that have given up nuclear weapons unilaterally and from non-nuclear weapon states. The participation of personnel from multilateral organisations such as the International Atomic Energy Agency, the Comprehensive Nuclear-Test-Ban Treaty Organization and the Organization for the Prohibition of Chemical Weapons with experience of verification procedures in other contexts may also be valuable.

A mandated group of such scientific experts could then begin to tackle the complex technical issues surrounding multilateral verification by learning from and consolidating past efforts and beginning to lay down a set of concrete and credible solutions that address possible disarmament scenarios. During 2017, VERTIC will explore stakeholder and expert views on the feasibility of establishing such a group. This activity will have the additional benefit of creating an emerging international knowledge-base of practical and inclusive verification options and enhancing the capacity of nuclear-weapon states and non-nuclear-weapons states alike to monitor the destruction of nuclear warheads and associated

equipment and infrastructure.

Embracing OSINT on chemical weapons

By Simeon Dukic

The role of open source intelligence (OSINT) has gained greater value in the past two decades, and there are two main reasons for this change. First, with the start of the information revolution, the world has seen a virtual explosion of publicly available data driven by the growth of the Internet and mobile communication technologies. Second, the threat environment changed with the fall of the Berlin Wall. Currently, national security priorities mainly aim at tackling acts of terrorism and humanitarian crises instead of state-centred tensions and hostilities. As a result, traditional covert human and signal intelligence (HUMINT and SIGINT) has needed to adapt to new and greater challenges (see 'Monitoring non-state actors: the Investigatory Powers Bill' later in this edition). OSINT offers a complementary route for entities to obtain information in order to improve decision making.

OSINT is utilised in countering the proliferation of weapons of mass destruction. Its importance was emphasised in the Final Report of the Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction (WMD Commission) in 2005. The report advocated for the creation of an Open Source Directorate within the CIA, which materialised with the creation of the Open Source Center (now known as the Open Source Enterprise, see www.opensource.gov). Moreover, the International Atomic Energy Agency (IAEA) has developed a mechanism for using OSINT to supplement traditional safeguards. Here, OSINT forms an important part of an 'all source' information collection. The agency utilises four forms of OSINT, namely media, technical information, imagery, and trade data.

Is there any potential for using OSINT to monitor chemical weapons proliferation? Nuclear and chemical material and

facilities are completely different. For example, while it might be possible to identify a nuclear reactor, or a reprocessing plant, by using satellite and 3D imagery software, chemical facilities are often less distinguishable. It appears that the Organization for the Prohibition of Chemical Weapons (OPCW) has not used OSINT as systematically as the IAEA to date. But a report submitted to the OPCW Director-General, written by Ralf Trapp in 2015, indicates that the organisation makes some use of satellite imagery. In his paper, Dr. Trapp notes, ‘Satellite imagery proved very beneficial for the preparation and planning of field activities and team support with regard to ensuring safety and security, and provided a way of independently assessing security-related and site-specific information.’

It may be instructive to consider the chemical weapons attack on 21 August 2013 in the suburbs of Damascus. Here, OSINT played a key role in determining their use. UK and US intelligence reports relied heavily on publicly available information to reach their conclusion. A non-governmental organisation, Human Rights Watch, also issued reports based exclusively on open source data and arrived at very similar findings as the UN. However, in this case, OSINT was applied retroactively to determine the use of chemical weapons as opposed to production or possession of chemical weapons.

Another example involves the Tokyo subway sarin attack by the religious cult Aum Shinrikyo in March 1995. After their inability to acquire or establish a nuclear program, the group focused on acquiring chemical weapons. While the intelligence agencies and law enforcement agencies did not predict or prevent the Tokyo subway chemical attack, a writer who followed the group predicted that an attack was going to occur based on open source information connected to the group. A year before the attack on Tokyo’s subway, Aum Shinrikyo members used chemical agents to poison judges that were involved in a real-estate case against the group, which was an indication that the group had the necessary material to pull off a chemical attack. But, it is unclear if

OSINT was used to monitor the production or possession in itself.

The Middlebury Institute of International Studies at Monterey has initiated a Project on Crowdsourced Imagery Analysis (see Crowdsourced Monitoring with ‘Geo4NonPro’, Trust & Verify No 153 and ‘The imagery revolution continues’ later in this edition). Part of this project aims to analyse and map Myanmar Directorate of Defense Industries (DDI) Facilities that are sometimes alleged to be producing chemical weapons. The project utilises satellite imagery to observe facilities in five different regions. The images include Near-Infrared Radiation (NIR) sensors that can intercept light that show whether the vegetation of a specific area is healthy or not. Unhealthy vegetation close to the facilities could perhaps be indicative of the presence of toxic chemicals. Projects like this could be examined more closely to establish ways to collect data that could be used to support monitoring and verification of chemical weapons-related obligations.

Although the number of cases where OSINT has been used to counter chemical weapons production and acquisition appears to be relatively limited so far, open sources could nevertheless prove to be a useful tool to monitor possible non-compliance. The value of open source information has been discussed by the OPCW scientific advisory board’s temporary working group in some detail. The discussion involved looking at the practices of other international organisations conducting verification. Moreover, Dr Trapp, in his report, argues that the OPCW ‘should continue to review new methods, procedures and equipment that it found useful during the Syria mission, and retain/further develop the technical aspects of its verification methodologies and techniques.’ He specifically highlights open-source monitoring and satellite imagery in his recommendations. It is hard to disagree.

Monitoring non-state actors: the Investigatory Powers Bill

By Katherine Täger

At the end of last year, the UK saw a contentious Investigatory Powers bill quietly passed into law. The bill has had several manifestations and been the subject of much controversy since autumn 2015, receiving extensive criticism from both tech producers and human rights organisations. The bill permits two main practices that have caught the attention of these critics: one, its permission for bulk interception methods, and two, its allowance for government-condoned ‘computer network exploitation’ (CNE) – a practice equivalent to hacking.

The bill has been characterised as a tool that enables government surveillance. However, it establishes bulk interception practices rather than provides an active on-going surveillance tool specifically. Bulk interception is a passive method of obtaining a large volume of communications or portions of them. These communications – either telephone or internet based – are acquired from various sources of distribution. Usually, governments compel internet service providers (via a warrant or otherwise) or companies providing the physical infrastructure of communication, like undersea fiber-optic cables, to capture communications at their origin. As the UK is a major hub for such cables, this approach has the potential to intercept a large amount of information coming from a variety of countries. Once intercepted, messages are filtered through algorithms and then analysed by intelligence officers searching for content of interest. Methods vary from country to country, but the basic concept remains the same: an abundance of information is obtained for retrospective filtering and analysis, then stored and utilised for future intelligence and police operations. Groups like Privacy International argue that this information ‘can allow an intrusive and comprehensive view into a person’s private life’. The bill attempts to address such concerns on how bulk interception can be used, most significantly, by stipulating that these techniques cannot

be used to establish facts about UK citizens or residents. This information can only be obtained via a warrant, and when these communications are intercepted by accident, it is the job of the government to destroy it. The other allowance made by the IP bill is for ‘computer network exploitation’ or CNE. This activity uses the techniques of hackers to infiltrate the computers of terrorist suspects. This could include infiltrating computer networks to obtain emails or records, but also controlling their devices’ built-in microphones and cameras. CNE methods within the UK require warrants that are ‘clearly justified and will balance intrusions into privacy against the perceived intelligence benefits’, but international efforts may be more extreme. The UK government claims CNE is an essential tool in areas where their agents cannot safely obtain information on suspects, or where little information is known about a suspect network.

While these provisions are controversial, they are perhaps not surprising. Many aspects of the bill confirm existing governmental information gathering practices in an Internet-reliant world, and other provisions codify practices that the UK government has engaged in for years, revealed previously in the Snowden leaks. However, the bill sets a legal precedent for government access to data and metadata, in addition to introducing unparalleled requirements for communications providers regarding data retention. These requirements have received the most criticism. In December, the European Court of Justice ruled that the bill is unlawful, citing its ‘general and indiscriminate retention of traffic data and location data’. The UK government has formally responded to this ruling with a note, stating that the bill ‘is essential to ensuring that this crucial data is available to law enforcement... and unless companies are required to retain that data, much of it would no longer be available’. Until divorce proceedings with the European Union are completed, the UK government, however, would have no option but to comply with the court’s ruling.



2016 Comprehensive review of UN Security Council Resolution 1540 (2004)

By Sonia Drobysz

On 15 December, the UN Security Council unanimously adopted resolution 2325 (2016), reiterating the decisions and requirements in resolution 1540 (2004) to prevent the proliferation of nuclear, biological and chemical weapons. It also endorsed the 2016 comprehensive review of the status of the implementation of resolution 1540. The review's objective as stated in its modalities paper was to address ways of 'improving the implementation of the resolution by member states, by identifying and recommending specific, practical and appropriate action to that end and to analyse the operation of the committee [established pursuant to the resolution] in the conduct of its tasks and recommend any changes considered necessary'.

A final report was prepared by the 1540 committee, following a thematic approach based on its four working groups: national implementation; assistance; cooperation; transparency and outreach. The report also addressed the administration and resources of the committee. Data from the 1540 matrices was carefully analysed (the matrix is a tool to organise information provided by member states and obtained through official open sources about the national implementation of the resolution). Additionally, as noted by the United States during the Security Council debate which followed the adoption of resolution 2325, 'the review was inclusive' as it 'gave voice to many dozens of states, international and regional organizations and, in a major improvement over the 2009 review, academia, civil society and industry representatives'.

The discussions on the final document were reportedly contentious, with Russia seen as trying to weaken the text. Controversial issues included whether to mention the use of chemical weapons in Syria, how to describe gaps in imple-

mentation without 'naming and shaming' specific states, and whether to strengthen the administrative support structure for the committee. Two months of negotiations were needed to reach an agreement within the committee, with states noting their disappointment that some permanent members had limited the full realisation of what had been proposed.

The report nevertheless provides a valuable in-depth analysis of the status of measures taken by states to implement resolution 1540's requirements. It notes that since the last review in 2009, most states increased such measures 'especially in taking legal actions to prohibit activities of non-state actors related to nuclear, chemical and biological weapons and their means of delivery', as required by operative paragraph 2 of resolution 1540. These penal measures are often adopted to implement specific conventions such as the Chemical Weapons Convention, Biological Weapons Convention, International Convention for the Suppression of Acts of Nuclear Terrorism, and others, which overlap to some extent with resolution 1540. The latter, however, varies in scope and includes additional requirements that are not always covered by the other treaties. The report further underlines that 'the model legislation prepared by international organisations that are linked to treaties and other legal instruments typically does not cover all the legally binding obligations under resolution 1540'. Resolution 2325, therefore, encourages highlighting these obligations in model legislation and guidelines, where appropriate.

Progress seems slower in adopting accounting, security and export control measures, as required in operative paragraph 3 of resolution 1540. In that respect, the overall rate of implementation measures to account for and secure materials related to biological weapons is far less than for materials related to nuclear and chemical weapons.

As implementation gaps and weaknesses remain, the Secu-

rity Council decided that the Committee shall continue to intensify its efforts to promote the full implementation by all states of resolution 1540. In particular, the Council notes the need for more attention on enforcement measures; measures relating to biological, chemical and nuclear weapons; proliferation finance measures; accounting for and securing related materials; and national export and transshipment controls. At the same time, states are called on to intensify their efforts to achieve full implementation of the resolution. They are also encouraged to provide the 1540 committee with specific details of the assistance they may need to do so.

However, it is not only the committee that can assist with 1540 implementation, and the report duly notes the contribution made by civil society. It then recommends that the Committee continues to engage, when and where appropriate, civil society, including industry and academia in assisting states, upon their invitation, in the implementation of resolution 1540. Resolution 2325 also requests the 1540 Committee to continue to organise and participate in outreach events at the international, regional, subregional and national level, including inviting parliamentarians as well as representatives of civil society. It further encourages the committee to ‘continue drawing on relevant expertise, including industry, scientific and academic communities (...) which can assist states in their implementation of resolution 1540’.

VERTIC’s National Implementation Measures programme is currently implementing a project with the Stimson Centre to strengthen legislative implementation of resolution 1540 in Latin America and the Caribbean.

IAEA International Conference on Nuclear Security

By Sonia Drobysz

The International Atomic Energy Agency (IAEA) hosted its second international conference on nuclear security at its headquarters in Vienna from 5 to 9 December 2016. The first

conference took place in 2013. This time, it confirmed the central and leading role the agency is to play in nuclear security now that the nuclear security summit (NSS) process has concluded. This summit process consisted of a series of high-level meetings gathering world leaders in an international effort to secure vulnerable nuclear material worldwide. It came to an end with the last summit in Washington April 2016.

The first part of the conference consisted of a ministerial segment during which states delivered statements on achievements, commitments and actions taken to strengthen nuclear security, and adopted a declaration reaffirming their pledge to continuously maintain and further strengthen nuclear security. The second part was dedicated to a scientific and technical programme with parallel high-level policy and technical sessions on six main themes. These themes were international legal instruments for nuclear security; international bodies and initiatives; nuclear material and nuclear facilities; radioactive material and associated facilities; nuclear and other radioactive material out of regulatory control; and national nuclear security regimes.

The discussions were marked by the entry into force on 8 May 2016 of the Amendment to the Convention on the Physical Protection of Nuclear Material which extends the scope of the convention from focusing primarily on material in international transport to include material in domestic holdings. In particular, the amendment adds new offences such as the sabotage of nuclear facilities; obliges states parties to establish, implement and maintain a regime for the physical protection of nuclear material and facilities in peaceful domestic use, storage and transport; and provides for expanded international cooperation. It took more than ten years to reach the necessary number of ratifications for the amendment – which was adopted in July 2005 – to enter into force. The amended convention is now seen as a central pillar of international nuclear security, as it is the only treaty focusing on physical protection of material both in international

transport and in domestic holdings.

The universalisation of what is now entitled the ‘Convention on the Physical Protection of Nuclear Material and Nuclear Facilities’ (CPPNMNF) is the next step. Myanmar’s adherence during the conference was in that respect a significant move, bringing the total number of states parties to 107. The implementation of the amended convention through the adoption of laws and regulations and their effective application was also a key topic of the conference. Several states shared their experience in implementing the CPPNMNF and other nuclear security instruments. At the same time, many initiatives to help them overcome associated challenges were presented, such as assistance activities of international and regional organisations including the IAEA, the United Nations Office on Drugs and Crime, the Committee established under UN Security Council Resolution 1540 and the European Union. VERTIC’s National Implementation Measures Programme also had the opportunity to explain its legislative assistance activities to support the implementation of nuclear security instruments, during the open questions and answers sessions. The discussions highlighted the need for better coordination and cooperation amongst assistance providers.

The conference also gave the opportunity to consider reporting obligations, such as CPPNMNF Article 14 under which states parties shall inform the IAEA of their laws and regulations giving effect to the convention. Only twenty states have provided this information to the agency so far, as shared through the IAEA nuclear security information portal (NuSec). While some of them explained the difficulty of gathering all the relevant data, they emphasised how this nevertheless enabled them to get a better picture of their national nuclear security situations and identify areas for improvement. Proposals for more transparency on nuclear security measures were nevertheless met with concerns regarding the confidentiality of the information to be shared. States having published reports concluding IAEA International Physical Protection Advisory Service (IPPAS) missions (which

provide peer advice to assist in strengthening nuclear security regimes) explained that sensitive parts could easily be removed before circulation to the public. VERTIC hosted an event on the margins of the conference to explore further ways to support nuclear security reporting and information sharing into the future.

The issues mentioned above, namely CPPNMNF universalisation, implementation and reporting will likely be discussed during the upcoming convention’s review conference – another item that was widely discussed during the Vienna event. According to article 16 of the amended convention, states parties shall convene five years after the entry into force of the amendment to review the implementation of the convention and its adequacy as concerns the preamble, the whole of the operative part and the annexes in the light of the then prevailing situation. The first review conference will take place in 2021. Criteria for an effective review process were tabled, based on examples and lessons learned from other treaty regimes such as the Non-Proliferation Treaty and Biological Weapons Convention. The speakers noted that the following issues deserved specific attention: the importance of maintaining the focus of the review conference and of avoiding introducing external topics; participation in the review, with the possibility of inviting non-states parties; and the structure and frequency of preparatory and intersessional work. Participants also mentioned the establishment of sub-groups, working groups and subsidiary bodies; and decision making at the conference. The latter was seen as a significant issue that has adversely affected some review processes, and preventing negotiations deadlock by not placing emphasis on the need to adopt a final document. The IAEA, as the convention’s depository, was encouraged to play an active role in developing concrete proposals with options for the review process to be considered by states parties. These could be presented during the next international conference on nuclear security, which the Agency was called upon by its General Conference to convene in three years.



VERTIC hosts side-event to IAEA Nuclear Security Conference

By Katherine Tajer

During the IAEA Nuclear Security Conference in Vienna in December, VERTIC hosted a side event with the Nuclear Threat Initiative and the Ministry of Foreign Affairs, Netherlands. The panel entitled ‘Supporting Sustainability in Nuclear Security Reporting and Information Sharing’ was hosted at the Vienna Centre for Disarmament and Non-Proliferation (VCDNP).

Larry MacFaul, Programme Director for Verification & Monitoring VERTIC, opened the meeting by outlining the goals of the initiative through which the event was being held and the current landscape for nuclear security reporting. Samantha Pitts-Kiefer Director, Global Nuclear Policy Program, NTI and Jonathan Herbach, Senior Policy Officer, Ministry of Foreign Affairs Netherlands outlined the motivation for the development of a new reporting tool that the initiative focuses on: the Consolidated National Nuclear Security Report.

Katherine Tajer, Researcher, VERTIC, then presented on VERTIC’s recent workshop in Abidjan, Côte d’Ivoire, looking to test the use of the Consolidated Report Format. Georges Monnehan, Director for the Nuclear Physics and Radioprotection laboratory in Cote d’Ivoire, followed with a description of the state of nuclear and radiological activities in the country.

The second half of the event explored the thoughts and experiences of a range of nuclear security experts from around the world. Ambassador Alfredo Labbé, Advisor to the Minister of Foreign Affairs and Special Envoy for Nuclear and International Security Chile, highlighted institutional issues

as a barrier to greater reporting. Rob Floyd, Director General, Australian Safeguards and Nonproliferation Office, gave an analysis of Australia’s reporting commitments and its dedication to transparency with regards to its nuclear activities. Abel Gonzalez, Autoridad Regulatoria Nuclear de Argentina, discussed his country’s historical commitment to nuclear security. Finally, Luca Lentini, Project Coordinator and Research Associate, Centre for Science and Security Studies, King’s College London, presented on nuclear security culture and states’ engagement with international instruments.

The panel then invited questions and debated ways to secure and preserve good reporting and information sharing rates into the future and the role of the Consolidated Report as a tool to increase nuclear security reporting.

VERTIC would like to take this opportunity to thank again the speakers and the attendees that contributed to an enlightening discussion. We would also like to extend thanks to the VCDNP for their invaluable coordination in making the event possible.



The imagery revolution continues

By Andreas Persbo

In 2000, Kings College Professor Bhupendra Jasani wrote a chapter on satellite imagery for the Verification Yearbook. In it, he noted that ‘If improvements in resolution were to be taken as a measure of progress, then, over the past 25 years, this aspect has changed by a factor of almost 100.’ In 2017, more than 16 years later, the resolution revolution continues. In 2014, Worldview-3, a commercial satellite owned by Digital Globe, delivered images with a 31 cm panchromatic resolution and 1.24 m multispectral resolution. This resolution allows users to easily make out individuals on the ground, as well as fine details on vehicles and ships.

However, it is Landsat data that has started to revolutionise the way academia and non-governmental organisations use satellite imagery. The first Landsat vehicle was launched in July 1972, originally named the Earth Resources Technology Satellite. Two satellites remain in orbit, Landsat 7, launched in April 1999, and Landsat 8, launched in February 2013. Landsat 7 provides visual imagery with 30-meter spatial resolution and infrared at 60-meter resolution. Landsat 8 is not much better. Compared to the latest commercially available imagery, the Landsat series falls far behind. So why are they so relevant?

In a recently edited volume, *Remote Sensing and Digital Image Processing*, Yifang Ban, a Professor at the Royal Institute of Technology in Stockholm, Sweden, highlights how the low-resolution imagery has spawned a wealth of research. Using the keywords ‘change detection’ and ‘Landsat’ she notes how the number of publications per year has increased significantly, from less than 50 a year in 2003 to almost 200 a year in 2015.

Academic and nongovernmental analysis of satellite data is bound to increase over the years as data from the European

Union’s Copernicus Programme is becoming freely available through a user interface called the Sentinels Scientific Data Hub available at scihub.copernicus.eu/dhus.

Sentinel 2A, launched in 2015, collect images in 13 bands. The four spectral bands (blue, green, red, and one near infrared) provide imagery on a 10-meter resolution. Four visible and near infrared bands provide images at 20-meter resolution, and the remaining ultra blue and short-wave infrared bands provide images on a 60-meter resolution. Three satellites, Sentinel 1, 2s and 3s together are transmitting approximately four terabytes of data every day.

The increasing availability of coarse resolution data has a broad range of uses in monitoring including urban mapping, urbanisation monitoring, environmental impact assessments, crop monitoring, deforestation, desertification, flooding as well as biodiversity monitoring. Other applications include land cover mapping and change detection, vegetation dynamics, land surface dynamics and natural disaster and hazard monitoring. For those interested in how climate change impacts the Arctic, free data has been used for coastal monitoring, surveying the retreat of glaciers and ice shelves as well as sea ice monitoring. Trust & Verify have previously covered the application of satellite monitoring to deforestation, see ‘Satellite Monitoring in Congo’, *Trust & Verify* No. 134).

Freely available satellite images lag behind both commercially and state operated imagery. While it is unknown what type of resolution could be acquired through, for instance, the United States’ KH-11 satellites, it is assumed that Block III vehicles (launched in the 1990s) can capture imagery at resolutions down to 10 to 15 centimetres. Commercially, researchers can only access resolution this fine through aerial photography (see ‘A surprising gift’, *Trust & Verify* No. 137). Google Earth, a popular application enabling access to both satellite and aerial photographs, sports resolution this high in some places, such as Las Vegas in the

United States and Cambridge in the United Kingdom.

While freely available satellite imagery has its uses in monitoring large and (relatively) easily identifiable events, such as retreating glaciers or tropical forest cover, it has limited use in monitoring some aspects of human activity. For instance, to monitor the use of a nuclear reactor or activities at a chemical plant, will require higher resolution imagery in several bands. Moreover, the analyst is likely to require several images over time, as to facilitate scene-change analysis. While costs are coming down (it is possible to buy high-resolution imagery for about US\$10-14 per square kilometre), minimum order areas and the requirement to buy several sets of imagery over time will still create a financial hurdle for nongovernmental organisations or academics. However, prices are likely to come down with an increase of suppliers.

The widespread use of freely available satellite imagery, throughout several bands of light, is a new phenomenon, still in its infancy. However, research is taking off in a remarkable way. There are now several first-class journals covering the field. The *International Journal of Remote Sensing*, published by Taylor & Francis, and *IEEE Transactions on Geoscience and Remote Sensing*, published by the Institute of Electrical and Electronics Engineers, leads the field.

Moreover, nongovernmental initiatives are underway to demystify the art of satellite imagery analysis and to educate a new cadre of researchers in their use (See Crowdsourced Monitoring with 'Geo4NonPro', *Trust & Verify* No 153). The imagery revolution continues.

Automation in nuclear inspections

By Andreas Persbo

Nuclear safeguards on uranium enrichment plants require a meticulous accounting of material in solid, gas and liquid phases. Knowing how much uranium-235 is present in a plant at any given time is not straightforward. An inspector would need knowledge of how much material is being fed

into the process, how much material is produced, and how much remains in waste. There are several pathways along which a site operator could unlawfully divert fissionable material for military or unknown purposes. If the International Atomic Energy Agency (IAEA) had the ability to monitor all material flows, and periodically calculate the total uranium (and so the uranium-235) balance at a plant, many of those pathways would be shut down.

The problem is that real-time monitoring would - when using today's safeguards technologies - require a continuous inspector presence at a site. There are neither human nor financial resources available to introduce such a regime on all sites under safeguards.

For several years, the Pacific Northwest National Laboratory (PNNL) has been leading a project on an 'Unattended UF6 Cylinder Verification Station' (UCVS). The work has been carried out under the auspices of the United States and European Commission Support Programs to the IAEA. PNNL has recently made public a 177-page phase one report of this project, outlining progress up to May 2016.

The IAEA would place a UCVS station at, as the report puts it, 'key intersections of cylinder movement between material areas' or 'at the operator's accountancy scales.' The station itself would make use of several technologies designed to identify cylinders of uranium hexafluoride - a feed material - and make a non-destructive assay of its contents. The station would also be subject to video surveillance, and all information would be subject to real-time transmission to the IAEA.

The report illustrates a typical use of the UCVS station, by examining the movement of a 30B cylinder (a relatively small container capable of holding 2.2 tonnes of uranium hexafluoride). The empty cylinder would first be brought to the station from storage. It would be scanned to verify that it is empty by industry standards (there is always some degree of residue in used containers).

The operator would then fill the cylinder. Before moving it back to storage, however, another scan would measure the enrichment and the mass of the uranium-235 and also the total uranium mass. It would store this data in a way that ‘supports automated comparison to operator declarations.’ The process would create a ‘fingerprint’ for each filled cylinder before it is moved back to storage. Once the plant operator is ready to ship the product, the container will be rescanned to verify the first measurement and confirm the consistency with the ‘fingerprint’.

The data can be reviewed and approved by an inspector sitting behind a desk at IAEA headquarters in Vienna. The automated system, as a consequence, allows the plant operator to release the cylinder for shipment without the need for an on-site inspection and manual measurements. It also saves the inspector the time and cost needed to travel out to the site.

The station may use two non-destructive assay technologies. The Hybrid Enrichment Verification Array (HEVA) measures the direct electronvolt signature from uranium-235 as well as the total neutron emission rate from the cylinder. Under certain circumstances, this will allow for a direct measurement of the mass of uranium-235 in the cylinder. In contrast, the Passive Neutron Enrichment Meter (PNEM) measure the singles and doubles neutron count rates from the container. This method, already in use in Japan, also allows the inspector to calculate the uranium-235 mass.

The project team, in consultation with the IAEA, Euratom, and Westinghouse, has produced a field prototype design, which was tested at Westinghouse’s Fuel Fabrication Facility in South Carolina over a period of eight months. Some 300 type 30B cylinders containing enrichments from natural to approximately five percent enriched in the isotope 235 went through the UCVS. While the trial showed promise overall, the project team suggested integrating the HEVA and PNEM measurement technologies into one package, called Neutron-Gamma Enrichment Verification (NGEV).

The report notes that the UCVS, when applied to processes illustrated above, can ‘significantly enhance the efficiency of IAEA’s safeguards approaches’ at large uranium enrichment facilities. It also argues that it would help ‘improving effectiveness for deterring and detecting diversion of material from declared flow’ in addition to having benefits to the site operator itself. The project team estimates that each station would cost about US\$207k to build. While this may sound like a hefty bill, it should be recalled that in 2014, some 70 percent of all International Atomic Energy Agency inspection days were devoted to uranium enrichment plants. Consequently, further automation would certainly help reduce costs.



Quotes

‘To verify, or not to verify? That is the question that journalists face on an almost daily basis; but the issue of whether media organisations should publish information that isn’t 100% watertight has been brought into sharp relief by the latest stories about Donald Trump and his alleged involvement with Russia.’

Ivor Gaber, Professor of Journalism, University of Sussex, discusses journalism as a “discipline of verification” in *The Conversation*, 11 January 2017.

‘Usually we just have numbers, or maybe just latitude/longitude, not actual names.’ Hugh Ducklow, an oceanographer at Lamont-Doherty Earth Observatory and the Center for Climate and Life, highlights the uniqueness of the environmental monitoring station ‘Obama’ in Antarctica. *Live Science*, 20 January 2017.

‘Oceanographers can detect the weak sea surface signals by satellite altimetry, which measures the sea surface height accurately [...] The people who put up these satellites certainly hadn’t thought of this idea.’ Zhongxiang Zhao, a principal oceanographer at the UW Applied Physics Laboratory, on looking at satellite data differently. *Dailyuw*, 9 January 2017



VERTIC launches BWC legislation report and online drafting assistant

By *Sonia Drobysz*

On the margins of the Eighth Review Conference of the States Parties to the Biological Weapons Convention (BWC), VERTIC's National Implementation Measures Programme launched its most recent projects on BWC implementation, which were funded by the Netherlands Ministry of Foreign Affairs.

During a side event held on 22 November and chaired by H.E. Mr Henk Cor van der Kwast, Permanent Representative of the Netherlands to the Conference on Disarmament in Geneva and Disarmament Ambassador at Large, NIM Programme Director Scott Spence first presented NIM's analytical report on the status of BWC States Parties' implementing legislation. Drawing on VERTIC's experience of analysing biological weapons legislation and providing legislative assistance to over 145 States Parties to review and adopt legislation to implement the Convention and the biological weapons-related requirements of UNSCR 1540, the report gives an overview of implementation requirements which have been addressed in States Parties' legislation, the types of measures adopted and trends in legislative implementation. The report is now available in English, French, Russian and Spanish on the VERTIC website under "Special Publications".

Scott then introduced VERTIC's new online Legislation Drafting Assistant tool, a user-friendly, internet-based tool aimed at supporting States to develop a draft bill for implementation of the BWC and related provisions of UNSCR 1540. Users can select certain areas to be addressed in their BWC bill based on model provisions drawn from VERTIC's Sample Act for National Implementation of the 1972 BWC and related requirements of UNSCR 1540. The text of the model provisions can be modified to suit the user's needs

by entering specific details, and by deleting or adding any word or sentence. Relevant model provisions are further explained in dedicated "explanation boxes" highlighting corresponding international obligations, the rationale behind the suggested text and offering suggestions and links to examples of best practices, which users are free to review and utilize, taking into account their own legal framework and traditions, level of biotechnological development and other national circumstances. At the end of the process a draft bill is automated in Portable Document Format (PDF). The Legislation Drafting Assistant is now accessible from VERTIC's website, on the pages of the National Implementation Measures Programme, and available in English and French.

VERTIC would like to thank the Netherlands Ministry of Foreign Affairs who funded these projects, as well as Tarek Atrissi Design Studio and Studioexile for their work on, respectively, the online tool and the report.



Director's reflections

By Andreas Persbo

Happy 2017. The year has gotten off to an interesting start, with the inauguration of a new president in the United States, and the United Kingdom giving some clarity of what it expects from future divorce proceedings with the European Union. However, one of the biggest challenges of 2017 is likely to be finding ways to preserve momentum on climate change mitigation.

In January, the UK Committee on Climate Change (also known as the CCC) published its Climate Change Risk Assessment 2017 evidence report. The CCC is an independent, statutory body established under the Climate Change Act 2008.

The report notes that 'the global increase in temperature of 0.85°C since 1880 is mirrored in the UK climate, with higher average temperatures and some evidence of more extreme weather events.' Soberingly, it points to 'at least a small chance' that warming (above pre-industrial levels) will hit four degrees Celsius or more by 2100. The report, therefore, calls for further preparations to mitigate the impact of our changing climate, and also suggests 'more stringent emission reductions as part of the global effort.' The two principal risks identified by the report include increased flooding and coastal change risks to communities in the United Kingdom, and its consequences for both businesses and infrastructure. It also notes a high risk 'to health, well-being and productivity from high temperatures.'

Internationally, the report calls for more government action to counter 'weather-related shocks to global food production and trade' as well as 'risks from climate-related international human displacement.' Among a wealth of research priorities, it highlights the need to do more thinking on imported food safety risks and long-term changes in global food production. It also asks the government to consider more carefully the risks to the country from violent international conflict as well as 'risks to international law and governance' overall.

However, 2017 is likely to see grave challenges to the international climate change agenda. When President Trump took

office at noon on 20 January 2017, the official White House page instantly changed, as is the custom. All mention of climate change or global warming vanished, replaced by a section noting that 'President Trump is committed to eliminating harmful and unnecessary policies such as the Climate Action Plan and the Waters of the U.S. rule.'

Moreover, press reports indicate that the US Environmental Protection Agency transition team intends to remove all non-regulatory climate data from the agency's website. Including all references to its June 2013 Climate Action Plan. Moreover, a 2013 memo ordering the EPA to establish its power sector carbon pollution standards 'will not survive the first day,' according to the non-governmental newsroom ProPublica, quoting transition sources.

Avoiding warming by five degrees Celsius, a scenario which entails potentially severe consequences for humankind's ability to sustain itself, is not impossible, even if the United States would turn its back at its emissions targets for the time being. However, it would require virtually all other governments to keep its pledges and commit to further reductions post-2020: and this gives rise to a classic free-rider problem (a dynamic that has dogged the climate negotiations in various forms for years). Why should governments commit to targets unless all major polluters are onboard? Pointing to the best estimates of the world's leading scientists, and their predictions of what climate change may mean for future generations, may not be enough in the era of 'alternative facts.' One can only hope that cooler heads prevail.

National Implementation Measures Programme

By Scott Spence

During this quarter, National Implementation Measures (NIM) programme staff prepared legislation surveys for the implementation of the Biological Weapons Convention (BWC) for two states. It prepared surveys for nuclear security instruments for one state and the Chemical Weapons Convention for one state.

On 4-6 October, NIM Programme Director Scott Spence travelled to Bridgetown, Barbados, for a Wilton Park confer-

ence on ‘Strengthening strategic trade controls in the Caribbean: preventing WMD proliferation and safeguarding borders’. He also facilitated the first working group on legal and regulatory requirements for UN Security Council resolution 1540 (UNSCR 1540). During 18-20 October, Mr Spence was in Muscat, Oman to assist an interministerial working group with a review of VERTIC’s analysis of their BWC implementing legislation and to prepare the groundwork for BWC legislative drafting in 2017.

In November, Scott and NIM Senior Legal Officer Sonia Drobysz attended the Eighth BWC Review Conference (RevCon) in Geneva, Switzerland. VERTIC co-organised a side event on ‘Addressing the Biosecurity Governance Challenges Posed by the Ebola Epidemic’, with the Global Emerging Pathogens Treatment (GET) Consortium and the Geneva Centre for Security Policy. Later in the month, Mr Spence travelled with the GET consortium to Freetown, Sierra Leone for a legislative consultation workshop on BWC and UNSCR 1540. During a second side-event held at the BWC RevCon, the NIM programme launched its report on the status of national implementing legislation for the BWC, and a new online BWC legislation drafting assistant.

On 5-6 December, Deputy Executive Director Angela Woodward participated in the 4th Myanmar-US/UK Nonproliferation Dialogue in Naypyidaw, Myanmar, and presented on the implementation of the BWC and Chemical Weapons Convention. The same week, Sonia Drobysz attended the second International Atomic Energy Agency conference on nuclear security in Vienna, Austria. Scott Spence was in Paris that week to participate in a Veterinary Legislation Support Programme Expert Training Seminar on Legislation and Biological Threat Reduction at the World Organisation for Animal Health (OIE). To conclude a busy year, Scott participated in an informal workshop on the Arms Trade Treaty on 8 December in Geneva.

Verification and Monitoring

By Larry MacFaul

This quarter, the Verification and Monitoring (VM) Programme focused on developing activities to support sustainability in nuclear security reporting and information sharing. In collaboration with the Nuclear Threat Initiative (NTI) and the Ministry of Foreign Affairs, Netherlands, we have explored

using a new tool: the Consolidated National Nuclear Security Report. The report aims to facilitate and simplify the complex reporting processes that have evolved under the international nuclear security regime to date. In November, Larry MacFaul, Programme Director, and Katherine Tajar, Researcher, travelled to Cote d’Ivoire to hold a workshop with the Ivorian Authority for Radioprotection and Nuclear Safety and Security to discuss nuclear security reporting and trial the Consolidated Report. Shortly after, in December, VERTIC held a side-event on the margins of the IAEA Nuclear Security Conference, at the Vienna Centre for Disarmament and Nonproliferation. We are very grateful to NTI, the Ministry of Foreign Affairs and the VCDNP for helping to make this initiative possible.

Meanwhile, we have continued scoping discussions on our project ‘Strengthening Open Skies: a technical, legal and policy analysis.’ This project, currently in its early stages, is being run in collaboration with project partner Professor Hartwig Spitzer of Hamburg University and is supported by the US Department of State.

During the quarter, the VM team conducted outreach to stakeholders concerning our project that explores views on establishing a group of scientific experts on nuclear disarmament verification. Further awareness-raising on this issue has been carried out by Andreas Persbo, Executive Director. In October, he attended the First Committee at the UN in New York where he presented on the topic. In late November, Andreas travelled to Tokyo where he gave two additional presentations on the matter.

Finally, we were delighted to welcome Noel Stott as a new member of the VM Programme in the position of Senior Researcher. Noel brings many years’ experience from his time at the South African-based Institute for Security Studies. He has extensive experience across arms control, disarmament and non-proliferation and on the challenges facing African states from conventional weapons. Noel’s expertise and approach to stakeholder engagement mean he will be a great member of the team. We look forward to working with him.

Grants and administration

By Mariama Gerard

In January, VERTIC secured a grant with a US national laboratory to assist in preparations for a country workshop in South-East Asia.

Over the last quarter, we also welcomed Noel Stott and Mariama Gerard to the centre. Noel joins as the Senior Researcher on verification and monitoring, and Mariama takes over the administration of the charity from Katherine Tajer, who has accepted a Researcher position with the VM programme. We thank Katherine for her years of service as the centre's administrative hub.

Lisa Gridley completed her VERTIC internship on 14 October 2016. Her internship was for eight months, to coincide with the academic year in New Zealand. She gained academic credit at the University of Canterbury for her VERTIC internship. Following on from her training at VERTIC, Lisa secured an internship at the BioWeapons Prevention Project in Geneva, Switzerland where she provided research assistance for the Daily Reports of the Biological Weapons Convention Eighth Review Conference, held during 7-25 November.

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VERTIC is an independent, not-for-profit, nongovernmental organisation. Our mission is to support the development, implementation and effectiveness of international agreements and related regional and national initiatives, with particular attention to issues of monitoring, review, legislation and verification. We conduct research, analysis and provide expert advice and information to governments and other stakeholders. We also provide support for capacity building, training, legislative assistance and cooperation.

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