

26th Workshop of the Pugwash Study Group on the Implementation of the Chemical and Biological Weapons Conventions

10 Years of the OPCW: Taking Stock and Looking Forward

17-18 March 2007, Noordwijk, The Netherlands

Report by Katie Smallwood (Harvard Sussex Program)

This was the thirteenth of the current Pugwash CBW workshop series to be hosted by Pugwash Netherlands. The Dutch Ministry of Foreign Affairs provided financial assistance for this meeting. It was the 52nd workshop to be held since Pugwash began organizing such meetings on CBW topics, in 1964.

Attending the workshop were 32 participants from 11 countries, all by invitation and in their personal capacities. This report of the workshop is the sole responsibility of its author, who was asked by the meeting to prepare a brief report in consultation with the Steering Committee. It does not necessarily reflect a consensus of the workshop as a whole, or of the Study Group. Attached to this report are the workshop agenda, a list of the papers presented, and the list of participants.

Lessons from the sixth BWC Review Conference

The workshop opened with a presentation on the outcome of the Sixth Biological Weapons Convention (BWC) Review Conference held in Geneva during 20 November – 8 December 2006. It is important to understand that the background to this Conference was difficult: the previous Review Conference held in 2001 (and suspended until 2002) had failed to produce a Final Declaration but had agreed on an intersessional programme for 2003 – 2005; and the fourth Review Conference, in 1996, had been shortened to two weeks, and proceedings were generally overshadowed by negotiations for the BWC Protocol. The 2006 conference therefore represented the first complete review in fifteen years.

Considering this history, the outcome of the sixth Review Conference was very successful, particularly in the consensus gained for the Implementation Support Unit (ISU), the intersessional programme 2007-2010, the initiative to enhance participation in the Confidence-Building Measures, and the promotion of universalization. The presentation included a number of points judged pertinent to the impending second Chemical Weapons Convention (CWC) Review Conference, in April 2008, the following among them:

- Much credit for the success of the BWC Review Conference was due to the skill of the President (Ambassador Masood Khan, of Pakistan) who accelerated the General Debate by not responding to niceties and imposing time deadlines on group and State Party statements.
- Non-governmental Organisations (NGOs) participated to a much greater extent than seen at CWC Conferences of the States Parties in The Hague. In Geneva, NGOs were given the opportunity, and responsibility, to make statements during a designated informal session of the Review Conference.
- Proposals for Action Plans on Implementation and on Article X (cooperation) were not agreed – this lack of consensus was in part due to late submission of the Article X proposal.

The Status of the Chemical Weapons Convention (CWC)

A presentation on the status of the CWC began by recognising the number of contributions made to the Convention by Pugwash in general, and a number of individuals at the present workshop in particular.

On the topic of disarmament, it was stated that all possessor states had taken significant measures towards disarmament leading to the destruction of 25% of all category-1 chemical weapons. Russia's efforts to improve the speed of their destruction to meet their intermediate deadline – 29 April 2007, for the destruction of 20% of their stockpile – was commended, as well as the start-up of two new destruction facilities: Kambarka and Maradikovsky. Whilst hoping that the intermediate deadline would be met, the presenter was aware of discrepancies between current OPCW and Russian estimates, quoting 10% and 17% destruction respectively.

The United States has destroyed 40% of its stockpile, with all but two facilities in operation. The US has also restated commitment to the looming 2012 deadline for complete destruction of its chemical weapon stockpile.

In other possessor states, 80% of category-1 chemical weapons have been destroyed. The main issue here is the problems that Albania is expecting ahead of the imminent destruction deadline on 29 April 2007. At its most recent meeting, the Executive Council (EC) considered Albania's request for an extension to the deadline. In doing so the Council appreciated the degree of unexpected technical difficulty experienced by Albania; it assessed the unquestionable commitment of the state to its destruction programme; and it decided that the matter would be taken up at the next session of the EC after a progress report from the Director General on 25 April 2007. This decision showed prudence on the part of the EC and the ability to judge individual issues on their own merit – a quality that may become important as the larger 2012 deadline approaches.

Universality still remains an important issue, and a priority for the CWC in the near future. The focus here should be on incorporating such states as North Korea, Egypt and Israel.

Industry verification has continued to be successful: over 1100 inspections have been carried-out in over 70 States Party; more than 5000 facilities have been declared under Article VI; and the number of declared Other Chemical Production Facilities (OCPFs) has increased exponentially. However, States Party must provide more comprehensive declarations, providing clearer details of what the facilities produce, in order for the OPCW to improve the selection of inspectable OCPFs relevant to the Convention, and the OPCW must implement a more proportional algorithm for the selection of such facilities.

Regarding implementation of Article VII (on national implementation), 97% of all States Party now have a National Authority, and over 41% of States Party have comprehensive legislation for implementing the treaty (the OPCW legal advisor expects an increase to 50% during this year). Concentration on States Party relevant to chemical trade is a priority for the OPCW now that general progress has been achieved. During the discussion prompted by this presentation, a number of points were made, for example; it was noted that as well as increased numbers, there had been a notable quality jump in the implementation of Article VII. Furthermore a suggestion was made that the Action Plan for Implementation should be regarded as a continuous process as the understanding of Article VII has changed with time and will continue to do so. The implementation of this Article might also be a useful tool for addressing new and specific challenges to the Convention, whilst also improving the CWC in a general manner.

Challenges to the CWC include delays in the destruction of chemical weapons; universality; practical implementation; enhancing the depth and reach of OCPF inspections; and

remaining relevant to current science and technology. But although a number of these challenges will surely be discussed at the second CWC Review Conference, the presentation stipulated that one shouldn't fall into the temptation of discussing certain issues prematurely. In discussing whether the implementation of the General Purpose Criterion (GPC) should be discussed at the second Review Conference, it was stated that anticipation and pre-emption should be carefully balanced against the dangers of ill-informed debate.

The implementation of tenure policy within the OPCW Technical Secretariat remains controversial. Safeguards are being applied to the Organisation's institutional memory, for example through the continued involvement of oldtimers through consultancy arrangements. It is recognised that the need to retain skills must be balanced with not allowing the monopolisation of knowledge. Thus the tenure programme should strengthen rather than weaken the Organisation as a whole. On the other hand, certain problems have occurred with young, non-career staff remaining in the Organisation for only short periods of time.

The last topic addressed was the OPCW's tenth anniversary, where the preparations continue to advance well. The events in a number of countries will demonstrate that there is no legitimacy in pursuing chemical weapon programmes and that states outside the Convention must join.

Preparations for the Second Review Conference

A presentation was made on the progress of the Open-Ended Working Group's (OEWG) activities in preparation for the upcoming Review Conference to be held in April 2008. The review process, compared to the first Review Conference, was started at an earlier date and outside contributions, such as background papers from Non-Governmental Organisations (NGOs), are also to be brought in earlier, in order for them to have a greater impact on State Party policy. The deadline for NGO submissions to the OEWG will be 1 July 2007. The chair of the working group has sought to focus discussion on post-2012 challenges.

NGO involvement at the Review Conference has been widely discussed, with some States Party having reservations about NGO participation, being concerned about politically difficult or irrelevant NGOs. However, many delegations are more in favour of NGO involvement since the positive experience of the Sixth BWC Review Conference in 2006. Noted in the workshop discussion, was that in the past the exclusion of certain NGOs had created more publicity than if they had been allowed to attend. And also that involving the NGO community would promote transparency and help engage the public through "fringe" activities that could run parallel to the conference itself.

During subsequent discussion of this presentation it was stated that there are already signs that Russia is cutting corners on the destruction of its stockpiles. This would no doubt be discussed at the Review Conference, but it was important that discussions of this nature do not affect confidence in the OPCW.

Destruction of Chemical Weapon Stockpiles

The presentation given to the workshop on the destruction of stockpiles focused mainly on Russian and US efforts to reach the 2012 deadline for complete disarmament. As referred to above, Russia has so far completed between 10% and 17% of its destruction and is due to reach its intermediate deadline for 20% destruction in April of this year. Three facilities are in operation, namely Gorny (1,142 metric tonnes), Kambarka (6,349 metric tonnes), and Maradikovsky (neutralisation of 13,692 bombs). However there are four sites yet to begin destruction, and for some the delay is partly due to the deterioration of international relations between Russia on the one hand, and Italy

and the US on the other. Concern has also been expressed that, in racing to meet the 2012 deadline, Russia may begin to cut corners in terms of protecting worker safety, neighbouring communities and the environment.

The US has destroyed 40% of its chemical weapon stockpile, its destruction programme is progressing in all but two facilities, Pueblo and Blue Grass, where there has been a collapse in funding.

There are also inconsistencies between US and Russian declaration practices, specifically on the question of at what point in the destruction process chemical weapons can be declared as destroyed. This issue needs to be resolved with the guidance of the OPCW.

The OPCW and the States Party should bear the following points in mind as 2012 approaches:

- the challenges in meeting the 2012 destruction deadlines should be discussed in public during the tenth anniversary celebrations later this year;
- however, it is important that the emphasis remains on the universality of the CWC, especially at bringing in countries such as Egypt, Israel, Lebanon, North Korea, Syria and Somalia;
- pressure must be placed on States Party to fully fund their destruction programmes and Global Partnership schemes need to be implemented adequately with states providing the amounts they promised;
- relations in this field between Russia and the US must be improved no matter how difficult this may be; and
- although Russia and the US would be in non-compliance with the Convention if they miss the 2012 deadline, in view of the efforts they have put into the process of destruction, the two States Party should not be punished.

Sea-dumped Chemical Weapons

The paper given on the status of sea-dumped chemical weapons under the CWC emphasised some of the problems that might arise from chemical weapons dumped at sea prior to 1985 – the cut-off date for them to become exempt from Articles III and IV of the CWC.

The Baltic Sea is a particular concern as chemical weapons dumped after the Second World War are resurfacing in fishermen's nets and in other cases, the wooden boxes in which they were buried have drifted (this is a problem specific to shallow-water dumping rather than deep-water dumping). In addition, recent pipeline projects – such as the proposed Baltic Sea gas-pipeline from Germany to Russia – have ignited strong debate over the implications of disturbing chemical weapon sea-dumping sites.

It is possible to identify a number of basic principles that should be followed in the treatment of sea-dumped chemical weapons, these are summarised as follows: recovered chemical weapons should be and remain the responsibility of the State Party that recovered them (the State Party in question would *not* become a possessor-state as defined by the CWC); the State Party should then voluntarily declare the nature and quantities of the material; and it should then come under the destruction and verification activities of the CWC and should be disposed of under the same rules as "toxic waste".

Careful consideration of the possible environmental hazards from purposely recovering sea-dumped chemical weapons, especially if no destruction resources are available, must be given before a State Party decides to embark on such a project.

CWC Compliance, Transparency and Civil Society Involvement

The discussion generated by the presentation of a paper on CWC compliance focused largely on the role of civil society and transparency in implementing the Convention.

There was no *one* view on the issue of transparency, but a general theme was that the consequences of increased transparency could be both positive and negative: democratic accountability is hugely important but should be balanced against possible effects such as decreased industry involvement, slower decision-making procedures, and an increased terrorist threat. It was also noted that in an international organisation that represents its member states, it is the member states who should be targeted to increase transparency.

In the related area of increased civil society involvement, which was taken up a number of times during the workshop, the main theme centred on how this would actually take place considering the restricted involvement at present.

Status of the CWC and Activities of the Scientific Advisory Board

The discussion moved on to the status of implementing the CWC ten years after entry into force, with a presentation on the activities of the OPCW Scientific Advisory Board (SAB). In terms of current SAB projects, there are four main areas:

- *Biomedical sampling and analysis*: *in vivo* sampling may be required at an alleged-use inspection site in cases such as the late arrival of inspectors or when the involvement of volatile chemicals is suspected, but it remains a very delicate issue. There are only 3 or 4 labs in the world that are equipped to perform these tests.
- *Sampling and analysis*: these measures would upgrade current verification methods by allowing the use of liquid chromatography/mass spectrometry (LC/MS) technology to perform the analysis of certain toxins (there are two well-known ones on the Schedules).
- *Education and outreach*: In conjunction with the International Union for Pure and Applied Chemistry (IUPAC) a project is aiming to introduce CWC issues – which are infrequently known to most chemists – into university curricula and promote codes of conduct for those using chemicals and engaged in the life-sciences.
- *Preparations for the Second Review Conference*: the progress here relates to the discussion on advances in science and technology summarised below.

At the first CWC Review Conference in 2003, developments in science and technology were examined on only a superficial level during the actual Review Conference. This was a result of reluctance – on the part of a few States Party – to discuss some of the recommendations of the SAB. The recommendations in question related to modifications in the schedules; submitting data on novel agents; and measures to deal with unscheduled toxic chemicals.

However, it is expected that the Second CWC Review Conference will approach consideration of the implications of advances in science and technology in all their aspects. For example, there is scope for some areas of change to be clearly defined; for the numbers of expert groups on new technology to be enlarged; and to effectively assess the respective benefits and dangers of new technologies. It was also noted that the SAB Report for the Second Review Conference will be distributed at a much earlier stage than in 2003, recognising the fact that the background papers for the First Review Conference were released too late to influence state delegations.

Challenges to the Chemical Weapons Convention

This presentation outlined six categories of challenge to the CWC that hold particular danger if not countered. The first, new utilities for chemical weapons, is brought about by the changing context of warfare which could lead to a more “favourable” environment for the use of chemicals; also by new science and technology enabling new targets; by changes in demand, illustrated by counter-terrorism measures. The General Purpose Criterion, properly implemented, is the safeguard. It was noted too that the use of chemicals against terrorists is, as in war, likely to be ineffective once the terrorists develop protective measures against them.

Second is the threat of proliferation which could seriously undermine confidence in the regime, this threat must be fully examined and countered by effective control regimes as regards intangible and dual-use technology – concepts that are poorly understood by many in the field.

Another challenge lies in the convergence of chemistry and biology. Linkages between the BWC and the CWC are becoming more and more important; in fact there are compelling arguments to bring the treaties together in certain of their respects. The OPCW, overseeing the more comprehensive of the two treaties, should take the lead.

Fourth is the threat posed by political expediency, or the prioritisation of national interest, rather than giving full value to the Convention. This happens and will continue to happen because States Party are able to overrun the independence of the OPCW and exploit the ambiguities of the Convention text.

Pernicious ignorance on the part of some States Party executives represents the fifth threat. Some examples of this come from State Party perceptions of certain issues, including the reluctance of some to recognise the General Purpose Criterion; the treatment of riot-control agents (RCAs); and the surprisingly common incorrect belief that the CWC does not cover toxins.

The final and sixth threat comes from the creeping legitimisation of chemical weapon use; the idea that some chemical weapons might be less reprehensible than others. This concept is most widely observed in the renewed interest in the development of “non-lethal” chemical weapons and corresponds to a slippery slope towards erosion of the spirit of the CWC.

These challenges therefore demand a much deeper understanding of the issues in -- and contribution to the debates from -- civil society. In addition they require, in the least, a reaffirmation of the General Purpose Criterion, even if translated into more easily comprehensible language, at the Second CWC Review Conference.

The General Purpose Criterion

This presentation examined the implementation of the General Purpose Criterion recognizing that the onus is primarily upon States Party to do this. It went on to explore ways in which the implementation of the General Purpose Criterion could be augmented by other international activities relating to chemicals such as the Strategic Approach to International Chemicals Management (SAICM) agreed in Dubai in February 2006 and now being taken forward by both UNDP and UNEP and activities relating to health and safety such as the REACH initiative that will apply to all countries of the EU. Mention was also made of the relevance of the February 2007 UNEP Decision (24/4) on Prevention of Illegal Trade in Chemicals and it was suggested that the OPCW should participate in such activities in a similar way to that in which the OPCW participates in the Green Customs Initiative. In discussion, it was recognised that the General Purpose Criterion could be taken forward as part of the ongoing OPCW actions on national implementation (Article VII).

Transfers of Dual-use Chemicals

The next paper outlined ways in which the CWC regime on the transfer of dual-use chemicals could be strengthened, arguing that the current level of implementation of the export control system is inadequate. The presentation concluded with four recommendations: (1) that the accuracy of aggregate data submitted by States Party should be improved, although it was noted that accuracy had improved recently and there were fewer discrepancies if data were analysed over a longer period of time; (2) an improved outreach to the chemical industry to promote a certain self-regulation from industry; (3) that formal measures should be introduced by the OPCW to verify trade restrictions, and; (4) that the Implementation Action Plan should be renewed, and strengthened, at the Second CWC Review Conference.

The harmonization of various trade regimes (such as the CWC, the Australia Group) would make the control of transfers more efficient but it would also be difficult for a number of reasons, including, that it would be very difficult to replace the relatively extensive provisions of the Australia Group, and effective implementation by all States Party is unlikely.

Discussion of potential changes in the CWC schedules highlighted the need to consider revision as they are the basis for the verification system and it must not become irrelevant, but also recognised the negotiation nightmare that this would entail (even though processes for doing so are provided for in the CWC text).

Interpreting the CWC – Law Enforcement and Riot Control

The dispute over the interpretation of certain aspects of the Chemical Weapons Convention was addressed in the context of the relationship between riot control and law enforcement. The constructive ambiguities built into the Convention text mean that different interpretations are tenable, and some interpretations will provide powerful challenges to the Convention, particularly in the debate around so-called non-lethal chemical weapons.

CWC Briefing Book Proposal

An introduction to the BWC Briefing Book that the Harvard Sussex Program had, in conjunction with BASIC and VERTIC, produced to assist States Party in their preparation for the Sixth BWC Review Conference allowed the workshop to make suggestions on how the concept could be applied to the CWC Review Conference, bearing in mind the differences between the two regimes, most notably, the presence of the OPCW.

Among the views put forward were: that such a briefing book should be written with at least some coordination with the OPCW; it should be broad enough to encompass viewpoints from developing countries; it should include background papers on issues relating to the Chemical Weapons Convention; that it should remain (as much as possible) a non-biased compilation of documents; the book should be targeted at diplomats with either little familiarity with the field or a lot on their agenda, and; the writers should be aware that it might be viewed as a western, academic perspective, so the possibility of endorsement from a non-western NGO should be explored.

New Actors and the Globalisation of CBW Technologies

On this topic the workshop was told about a research project currently in progress. With a general change in diplomacy away from governments and towards governance systems, the increasing globalisation of dual-use chemical and biological technologies has presented an opportunity for the implementation processes of the two CBW regimes to be decentralised. This more inclusive

approach has brought in a number of non-state stakeholders (among them industry, regional organisations and civil society) that have a role in the framing of issues, for example, the capacity of the International Union for Pure and Applied Chemistry for framing aspects of the CWC Review Conference agenda. The project is to produce ‘regulatory maps’ to identify actors in the CBW field and will look at: who they are; where they are; what they do; and how they do it. It will also examine the overlaps between new and old actors in the field.

The discussion of this research focused mainly on the comparisons between the chemical and the biological weapon fields, and on the current lack of non-state actors active in the chemical weapons area. However it was said that the post-2012 era CWC would invite a number of new actors due to the focus on trade and export controls.

Chemical Defence

A short presentation was delivered on the changes in the context of chemical warfare under the CWC regime and consequences for military chemical defence. It argued for a new chemical defence doctrine that would reduce the amount of defence required due to changes in threats, and in military conduct. It was noted however, that toxic industrial chemicals would present a more difficult undertaking from the perspective of chemical defence because the military are not trained for such attacks. It was also suggested that should funding be taken away from military defence, it should be redistributed to first-response teams such as the fire-fighters and the police. Other views were that chemical defence could never be done away with and it was less relevant in the context of terrorism, since entire populations could never be protected.

The Misuse of 21st Century Chemistry

The final presentation addressed developments in science and technology, particularly in the areas of pharmaceutical research and drug development, and how they are addressed by the CWC. It argued that programmes in chemical and biological warfare have always reflected current levels in science, with some being ‘piggy-backed’ onto scientific developments, and that a greater engagement of scientists was needed. The speaker hoped that a re-run of the First CWC Review Conference would not be repeated whereby the review of science and technology had been driven underground after the Scientific Advisory Board’s report to the OPCW Director-General.

Discussion emphasised the convergence of scientific disciplines as a challenge to the CWC and the possible need for another international body to screen changes in science and technology. It was also highlighted that the Open-Ended Working Group for the Second Review Conference was addressing the subject and would welcome written contributions on the subject, and that the SAB report was targeted for July.

Future Work

The date for the next workshop of the Pugwash Study Group on the Implementation of the Chemical and Biological Weapons Conventions in The Netherlands was discussed and it was concluded that it should be around the second CWC Review Conference, but that the exact timing would be confirmed at a later date. This concluded the proceedings of the meeting.

Final agenda

- I. Introductory Session
 - A. Welcome
 - B. Report – BWC Sixth Review Conference outcome
- II. 10 Years of the OPCW: Taking Stock and Looking Forward
 - A. OPCW on the eve of its 10th birthday - main achievements and challenges
 - B. Progress report on the OPCW/PC History project
 - C. CW destruction - what is needed to wind up by 2012 and what if...
 - i) Analysis of the reasons for delays so far
 - ii) Is 2012 achievable and what is needed?
 - iii) Towards a CW-free world?
 - D. Challenges and trends
 - i) General Purpose Criterion: implementing it adequately
 - ii) Technology Transfer and Dual Use
 - iii) Chemical Terrorism, Law Enforcement and Disabling Chemicals
 - iv) Globalization
 - E. Future of verification and compliance
 - F. What can scientific developments offer to the OPCW?
 - H. The Second CWC Review
 - i) Progress report
 - ii) What would be a successful outcome for the Second CWC Review Conference (April/May 2008)?
- III. Future work.

* * *

List of Papers

Discussion papers

1. **Walter Krutzsch:** Law enforcement including domestic riot control: The intent of the CWC negotiators
2. **Walter Krutzsch:** Compliance with the CWC
3. **Jiri Matousek:** Status of implementing the Chemical Weapons Convention ten years after Entry into Force, and the way ahead
4. **J P Perry Robinson:** Categories of Challenge now facing the Chemical Weapons Convention
5. **Graham S. Pearson:** The Challenges to the Chemical Weapons Convention (plus PPP)
6. **Jonathan B. Tucker:** Strengthening the CWC Regime for Transfers of Dual-Use Chemicals
7. **Jonathan B. Tucker:** Historical Research Note: Incapacitating Agents and the East German Ministry for State Security (“Stasi”)
8. **Jan Medema:** 10 Years of CWC (1987-2012): Does it make a difference (plus PPP)
9. **Thomas Stock:** Sea-Dumped Chemical Weapons under the CWC: More Questions Than Answers?
10. **Daniel Feakes and Caitriona McLeish:** New actors and the globalization of CBW technologies
11. **Daniel Feakes and Caitriona McLeish:** A proposal for a resource guide/ briefing book for the 2008 CWC Review Conference

PowerPoint presentations

- **Paul Walker:** An Update on Russian and US Chemical Weapons Destruction.
- **Graham Pearson:** Outcome of the BWC Sixth Review Conference.

Background papers

- **Alexander Kelle:** The Changing Scientific and Technological Basis of the CBW Proliferation Problem, in Science and Technology Report no. 7, Bradford Dept of Peace Studies, from the workshop on “Preventing the Misuse of 21st Century Chemistry: State of the Art of Drug Development and Delivery, and Selected Enabling Technologies, Belfast, 13-14 January 2006.
- **Ralf Trapp:** The First Ten Years, in Ian Kenyon and Daniel Feakes (editors), *OPCW: The Creation of the Organisation for the Prohibition of Chemical Weapons: A Case Study in the Birth of an International Organisation*, The Hague: T.M.C.Asser Press, 2007, pp 261-89.

List of Participants

Alessandro **Argentini** (Italy)
Sergey **Batsanov** (Russia)
Richard H. **Burgess** (USA)
Malik Azhar **Ellahi** (Pakistan)
Daniel **Feakes** (UK)
Georg **Frerks** (Netherlands)
Diana **Gosens** (Netherlands)
Richard **Guthrie** (UK)
Peter **Ito** (USA)
Alexander **Kelle** (Germany)
Ian **Kenyon** (UK)
Walter **Krutzsch** (Germany)
Maarten **Lak** (Netherlands)
Mark **Matthews** (UK)
Jiri **Matousek** (Czech Republic)
Caitriona **McLeish** (Ireland)
Jan **Medema** (Netherlands)
Arend **Meerburg** (Netherlands)
Ronald R. **Nelson** (USA)
Patrice **Palanque** (France)
Lyn **Parker** (UK)
Graham S. **Pearson** (UK)
Rogelio **Pfirter** (OPCW)
Sebastian **Prak** (Netherlands)
Julian Perry **Robinson** (UK)
Katie **Smallwood** (UK)
Thomas **Stock** (Germany)
Jonathan B. **Tucker** (USA)
Claudia **Vaughn** (Pugwash)
Florian **van der Wateren** (Netherlands)
Paul **Walker** (USA)
Mark **Wheelis** (USA)